

What is claimed is:

- 1 1. A method for forming a drill bit body, comprising:
2 infiltrating powdered tungsten carbide with a binder alloy in a mold, the
3 mold having therein at least one displacement adapted to form a mounting pad for
4 a cutting element, the displacement comprising a substantially cylindrical body
5 having a diameter selected to substantially conform to a radius of the cutting
6 element and a projection adapted to form a relief groove under a position of a
7 diamond table in the cutting element when the cutting element is mounted on the
8 pad, a width of the relief groove selected so that the relief groove extends back
9 from an outer surface of the bit body at least about 40 percent of that portion of a
10 thickness of the diamond table which does not extend past the outer surface.
- 1 2. The method as defined in claim 1 wherein the cutting element comprises a
2 tungsten carbide substrate, the substrate brazed to the mounting pad.
- 1 3. The method as defined in claim 1 wherein the at least one displacement
2 comprises a castable material formed into a single body.
- 1 4. The method as defined in claim 1 wherein the projection extends past an
2 external surface of the displacement by about 0.025 inches.

1 5. A drill bit body comprising:
2 a main body having at least one blade formed therein; and
3 at least one cutting element mounting pad formed on the at least one blade,
4 the mounting pad adapted to receive therein a substrate of a cutting element, the
5 mounting pad having a relief groove therein under a position of a diamond table in
6 the cutting element when the cutting element is mounted on the pad, a width of the
7 relief groove selected so that the relief groove extends back from an outer surface
8 of the blade at least about 40 percent of that portion of a thickness of the diamond
9 table which does not extend past the outer surface.

1 6. The drill bit body as defined in claim 5, wherein the bit body is formed
2 from powdered tungsten carbide infiltrated by a binder alloy.

1 7. The drill bit body as defined in claim 5 wherein the relief groove has a
2 depth of 0.025 inches.

1 8. A drill bit comprising:
2 a bit body having a plurality of blades formed therein; and
3 a plurality of cutting elements mounted on each of the blades, each cutting
4 element mounted on a cutting element mounting pad formed on one of the blades,
5 the mounting pad adapted to receive therein a substrate of the cutting element, the
6 mounting pad having a relief groove therein under a position of a diamond table in
7 the cutting element when the cutting element is mounted on the pad, a width of the
8 relief groove selected so that the relief groove extends back from an outer surface
9 of the blade at least about 40 percent of that portion of a thickness of the diamond
10 table which does not extend past the outer surface.

1 9. The drill bit as defined in claim 8 wherein the bit body comprises powdered
2 tungsten carbide infiltrated with a binder alloy.

1 10. The drill bit as defined in claim 8 wherein each of the relief grooves has a
2 depth of about 0.025 inches.

1 11. A drill bit body comprising:
2 a main body having at least one blade formed therein; and
3 at least one cutting element mounting pad formed on the at least one blade,
4 the mounting pad adapted to receive therein a substrate of a cutting element, the
5 mounting pad having a relief groove therein under a position of a diamond table in
6 the cutting element when the cutting element is mounted on the pad, the drill bit
7 body formed by machining a bit body blank.

1 12. A method for forming a drill bit body, comprising:
2 infiltrating powdered tungsten carbide with a binder alloy in a mold, the
3 mold having therein at least one displacement adapted to form a mounting pad for
4 a cutting element, the displacement being made from a single component
5 comprising a substantially cylindrical body having a diameter selected to
6 substantially conform to a radius of the cutting element and a projection adapted to
7 form a relief groove under a position of a diamond table in the cutting element
8 when the cutting element is mounted on the pad.

1 13. The method as defined in claim 12 wherein the relief groove has a depth of
2 about 0.025 inches.

- 1 14. The method as defined in claim 12 wherein the relief groove extends back
2 from an outer surface of the blade at least about 40 percent of that portion of a
3 thickness of the diamond table which does not extend past the outer surface.

009207 68426960